

ABSTRACT

COMPARISON OF SARIMA, HOLT WINTER'S EXPONENTIAL SMOOTHING, AND PROPHET METHODS IN INFLATION DATA FORECASTING IN INDONESIA

By

Desty Mayang Pratiwi

21110016

This study discusses inflation forecasting in Indonesia using three time series methods, namely SARIMA, Holt-Winters Exponential Smoothing and Prophet, with monthly inflation data from January 2014 to October 2024. Inflation forecasting is important to maintain economic stability and support decision making in the monetary, fiscal, and investment sectors. The SARIMA method was chosen because of its ability to handle complex seasonal data, Holt-Winters Exponential Smoothing is used to accommodate seasonal patterns through alpha, beta, and gamma smoothing parameters, while Prophet was chosen because of its flexibility in handling nonlinear trends, seasonality, and special events such as holidays. The research steps include literature study, data collection, exploratory analysis, preprocessing, modeling with the three methods, and accuracy evaluation using Mean Absolute Percent Error (MAPE). The evaluation results show that the SARIMA(2,1,2)(1,0,1)⁶ model has a MAPE of 8.11%, better than Holt-Winters Exponential Smoothing of 11.75% and Prophet of 52.85%. Thus, SARIMA was chosen as the best model to forecast Indonesian inflation from November 2024 to April 2025. The prediction results were 6.19%, 5.40%, 4.96%, 4.94%, 4.57%, and 4.58%, respectively. This model is expected to be a reference in formulating strategic policies to maintain economic stability and improve public welfare.

Keywords: SARIMA, Holt-Winter's Exponential Smoothing, Prophet, Forecasting, Inflation